

# Water WoRDs

## *Updates from the Water Resources Division*



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### Recognizing Success

In recent years, the Water Resources Division (WRD) has been really focused on [measuring our success](#). Division Chief Bill Creal is fond of basketball (and basketball metaphors) and has suggested that if we don't know where the 3-point line is, we are not likely to be as successful in our endeavors as Michigan water stewards. So as March Madness descends, let's talk about how we measure success in the WRD's Nonpoint Source Program.

The Nonpoint Source Program focuses on working with stakeholders at the watershed level to support the restoration and enhancement of our surface water resources by protecting our waterbodies from diffuse pollution sources ("nonpoint" being the opposite of a "point" source traditionally regulated by the WRD through its permitting functions). A lot of that work involves distributing grant dollars to watershed organizations and other partners to support local efforts to improve water resources.

Each year the Nonpoint Source Program evaluates the projects implemented by our partners to assess measurable improvements to water quality. There are four categories of these "success stories":

- those that fully restore all designated uses in a waterbody and result in its removal from Michigan's list of impaired waterbodies (the nonattainment list);
- those that restore some of a waterbody's designated uses;
- those that show progress toward achieving water quality goals;
- and those that demonstrate ecological restoration in waterbodies that are not impaired.

For 2013, the Nonpoint Source Program recognized the following three success stories.

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Dam before removal



Rock ramp that replaced the dam



**Nashville dam removal improves dissolved oxygen (DO) concentrations in the Thornapple River (Barry County):** Monitoring in 2008 found DO concentrations below the warm water criteria of 5 milligrams per liter (mg/L), due to high-sediment oxygen demand in the reservoir behind the dam in Nashville, Michigan. Removal of the dam and installation of a rock ramp in 2009 restored the river's natural channel dimensions and hydraulics, and increased DO concentrations such that this river reach is now meeting water quality standards. The DEQ will remove a 27 mile reach of the Thornapple River from the nonattainment list in 2014. This project, combined with another dam removal on the Thornapple, also reconnected over 60 river miles and 105 tributary miles in the upper and middle portions of the watershed, improving fish passage and recreational opportunities. DEQ staff also directed a mussel relocation project prior to the dam removal. In a single day, a total of 1,295 mussels were collected from below the dam and relocated to a site beyond the expected influence of the removal activities.



Photographs from the Thornapple River Mussel Relocation  
(photographs by Joanne Barnard, Barry Conservation District)

**River Meander Reconnection Improves Macroinvertebrates in the Dowagiac River (Cass County):** A portion of the Dowagiac River was channelized in the early 1900s, which increased water velocities, simplified instream habitat, and disconnected the river from its floodplain, all of which negatively impacted the ecology of the river. In 2007, a 1,320 foot reach of the river in Arthur Dodd Memorial Park, near Sumnerville, Michigan, was relocated from the straightened channel into a remnant meander, and instream channel structures were installed to ensure the stability of the new channel and improve instream habitat. Pre- and post-construction macroinvertebrate sampling found a 45 percent increase in macroinvertebrate taxa, including a 27 percent increase in sensitive taxa (mayflies, stoneflies and caddisflies) associated with excellent water quality and a whopping 152 percent increase in mayflies. Correspondingly, the pre- and post-construction sampling revealed a 75 percent reduction in tolerant taxa like isopods, snails, and leeches that are often overly represented in impaired waters. The success of this project has triggered upstream landowners to consider “re-meandering” up to 3 additional miles of the river.



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Aerial photo of the reconnected meander and the original channel



Arthur Dodd Park after the meander relocation



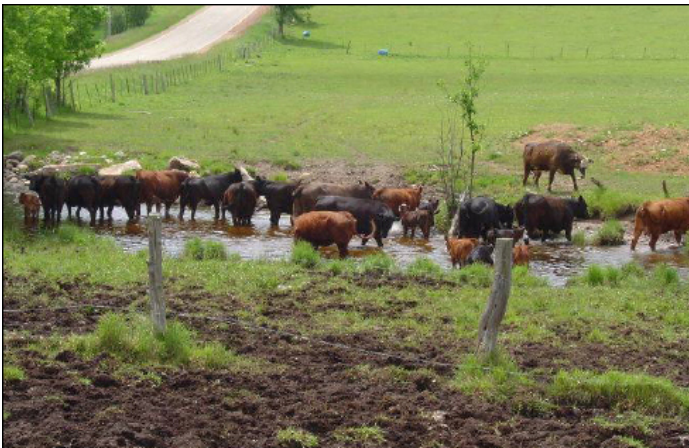
Photographs from the Dowagiac River Meander Reconnection Project

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**Excluding cattle improves channel stability, instream habitat and macroinvertebrate populations in Fitzgerald Creek (Dickinson County):** Unlimited cattle access to Fitzgerald Creek created a wide, muddy wallow in the stream channel, destabilized the stream banks, and degraded instream habitat and macroinvertebrate populations. Best management practices (BMPs) installed in 2007 included 5,510 feet of cattle-exclusion fencing, a rock-lined stream crossing, and 240 feet of bank stabilization. Post-BMP sampling in 2012 found improved instream habitat, riparian conditions and channel sinuosity; a 17 percent increase in macroinvertebrate taxa, and a 43 percent increase in sensitive macroinvertebrate taxa (mayflies, stoneflies and caddisflies).

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Cattle in the creek



Pre-BMP stream bank conditions



Pre-Construction Photographs of Fitzgerald Creek (2002)

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Restored Channel



Post-BMP stream bank conditions



Post-construction Photographs of Fitzgerald Creek (2012)

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The efforts of our partners will be recognized at the [Michigan Water Environment Association's Watershed Summit](#) taking place on March 26, 2014, in Bath, Michigan. Please join us in recognizing the outstanding efforts of the Barry County Conservation District; Meeting Ecological and Agricultural Needs within the Dowagiac River System (or "MEANDRS" for the Dowagiac Creek Project); and the Dickinson County Conservation District, while considering improvements that may be made in your local watershed. Perhaps your organization will implement our next Nonpoint Source Program success!

For more information on what it takes to become a Nonpoint Source Program Success Story, contact the WRD's Joe Rathbun ([rathbunj@michigan.gov](mailto:rathbunj@michigan.gov); 517-284-5517).